TEAMWORKING AND THE 'SHARPENING' OF PERIPHERAL VISION[1]

MIGUEL PINA E CUNHA
Faculdade de Economia
Universidade Nova de Lisboa
Rua Marquês de Fronteira, 20
1099-038 Lisboa; Portugal
email: mpc@fe.unl.pt
Tel: 351-212 822 725
Fax: 351-213 873 973

ROBERT CHIA
Graduate School of Business
School of Management
University of St Andrews
The Gateway, North Haugh
St Andrews, Fife
KY16 9SS; Scotland
email: rcc3@st-andrews.ac.uk
rchia@totalise.co.uk

[1] Paper prepared for presentation as a keynote address at the 9th EIASM International Workshop on Teamworking, Monte de Caparica, Portugal, September 8-9, 2005. This research was supported by a research grant from the *Fundação para a Ciência e a Tecnologia* (POCTI/GES/48967/2002).

Miguel Pina e Cunha is Associate Professor of Organization Theory at the Faculdade de Economia, Universidade Nova de Lisboa, in Lisbon, Portugal. His research has been published in journals such as the *Academy of Management Review*, *Organization Studies*, *Human Relations*, and the *Journal of Management Studies*. His current research interests include the study of peripheral vision and strategic foresight; complexity and organizational change; and positive management studies.

Robert Chia is Professor of International Management, University of St Andrews. He is the author/editor of several books and has published in the major international journals including *Organization Science*, *Organization Studies*, *Human Relations* and *Journal of Management Studies*. His current research interests include the study of peripheral awareness and strategic foresight; complexity and creative thinking; and cross-cultural management attitudes.

TEAMWORKING AND THE ‘SHARPENING’ OF PERIPHERAL VISION

ABSTRACT

Managers and organizations are normally focussed on a number of key issues and targets, such as strategic positioning, operations, competitors, internal processes, human relations, etc. Focus is fundamental to effective exploitation. Focus, however, carries with it some attendant risks. It may, for example, lead to an underestimation of critical moves taking place at the periphery outside the focus of attention. In such instances, peripheral vision becomes crucial to organizational survival. In this paper, we discuss how teams and teamworking may help re-educate attention and in so doing ‘sharpen’ peripheral vision in organizational contexts. A typology is built, which specifies how different types of teams deal with focus and periphery in practice. Next, we discuss the specific cases of the groups that are most oriented towards the periphery to uncover how they manage collective action and collective imagination. The paper finishes with a number of practical suggestions derived from the previous theoretical work. Six strategic practices are critically analyzed: zooming, improvisation, bricolage, scenario thinking, wild cards and weak signals.

Keywords: periphery, peripheral vision, teams, weak signals, minimal structures,

In a 2004 issue of *Long Range Planning* edited by Day and Schoemaker [1], a group of scholars discussed the interesting notion of the periphery with a special focus on peripheral vision. The periphery was defined as “wherever your attention is not” [2]. Because the dominant mantra in strategy-speak has traditionally been 'focus, focus, focus', there has been a tendency to ignore events and things occurring at the periphery of our attention. Yet, the periphery is ever elusive. 'Each time you turn your head to look at it, you create a new "periphery"'. [1] In this sense, the periphery is a paradoxical notion that can never be fully grasped. In fact, whenever one turns one’s attention to the periphery, it becomes a focus of attention and a new periphery is created: a way of seeing is a way of not seeing. The tension between the center and the periphery is ever enigmatic and thus provides an interesting topic for analysis. Focus and clarity, or attention to a center tend to be highly regarded notions in the fields of strategy and organization theory – as expressed in such concepts as niches, targeting, fit and consistency [3]. All these concepts give an idea of the narrowing and channeling of energies and resources, the creating of strategic alignments, and the centering and focusing of attention. The periphery, in contrast, precisely because it is peripheral, has received less attention. Concepts such as boundary scanning have certainly something in common with the notion of the periphery, but they do not fully capture the elusive character of a genuine peripheral vision.

Our aim in this paper is to contribute to the exploration and understanding of this vague, shadowy periphery and the type of peripheral vision required to deal with it. More specifically, we analyze why and how teams may constitute a particularly useful locus for ‘sharpening’ peripheral vision – the paradoxical challenge involved in ‘sharpening’ the periphery should be noted here. Sharpening here is taken to mean the ‘heightening

of sensitivity' to peripheral events and activities and not a narrowing of focal attention. With this goal in mind the paper is structured as follows. We start with an analysis of the nature of the periphery. Then we discuss why it is important for strategy studies. Next, the role of teamworking on the exploration of the periphery is considered. The differential impact of distinct types of teams on the improvement of peripheral vision is especially emphasized. In this way, we seek to contribute to the strategy literature through the analysis of how different types of groups nurture the development of peripheral vision and therefore facilitate the strategic learning process. The first step with that purpose is the better understanding of the notion of the periphery.

WHAT IS THE PERIPHERY?

In this section, we discuss the nature of the periphery and peripheral vision. Peripheral vision is *a cultivated sensitivity for attending to the hidden, the obscured, and the overlooked. It involves a re-education of attention away from focal objects and events to the marginal activities, the cognitively repressed, and the seemingly incidental events surrounding them*. To better understand the nature of the periphery and peripheral vision, the physiology of the human eye needs to be properly understood. As emphasized by students of *visual intelligence* [4] and noted by Day and Schoemaker [1], the neural retina contains two types of cells: rods and cones. Cone cells are concentrated near the center and are responsible for registering color and detail in good conditions of illumination. These are the cells that aid focal vision. Rod cells, on the other hand, are located around the edges of the retina and function better in poor lightning or when outlines are 'blurry' particularly at the periphery of vision. They are low-level weak signal detectors more sensitive to change and movement than to shape

or colour. For this reason, we are more sensitive to movement at the ‘corners-of-our-eyes’ than we are at the center. What is also interesting to note is that the retina contains many more rod cells than cone cells: about 120 million rod cells and no more than 6 million cone cells. This 20:1 ratio suggests that, from an evolutionary perspective, information gathered from the periphery is at least no less important than from the center. In fact, the human eye is designed to help people notice weak signals and sense potential attack from visual domains outside the focus of attention.

If the periphery is where your attention is not, then, it must of necessity be apprehended elliptically and never directly or frontally. As soon as one turns one’s attention to the periphery, one creates a new periphery. In this sense, the periphery is an inevitable ‘other’. Center and periphery co-define one another dialectically. As Capra [5] puts it, “by the very act of focusing our attention on any one concept, we create its opposite.” The act of focusing creates a zone of exclusion that we subsequently call the periphery and this is where ignorance lives [6]. Thus, when an organization focuses on one business model or one strategic initiative it is creating new blinds spots that prevents the development of alternative business models and strategies. Following March’s distinction between exploration and exploitation, organizations, in this sense, need to be simultaneously focussed on *exploiting* its competitive advantages and on *exploring* its peripheral blindspots [7]. In summary, the periphery is that elusive realm that disappears when we deliberately look at it. In gestalt terms, when we focus on the periphery, figure turns ground and ground turns figure.

This paradoxical, antithetical nature of the organizational eye, leads to a challenge both for managers and researchers: how can organizations ‘sharpen’ their peripheral vision?

The notion of ‘sharpening’ is paradoxical in itself, in the sense that the periphery, as we have seen, lies in the realm of the shadowy, the blurred and the gray. Yet, it is vital to our comprehension since it provides the background context, the vague penumbra surrounding our objects of attention that allows meaning and coherence to emerge. Despite the frequent insistence that organizations need to attend to the periphery, there are many restrictions to improving peripheral vision. These constraints exist at the individual, group and organizational levels. At the individual level, people tend to force the world to fit their existing cognitive frames. Mental filters help people select the information that confirms their expectations and validate their beliefs and to ignore information that disconfirms or invalidates their assumptions [8]. At the group level, well known *defensive* processes such as groupthink, establish what the group can think about and what should or should not be expressed [9]. At the organizational level, the development of a *dominant logic* tends to obscure possibilities lying outside this logic [10]. All these defensive routines act selectively as blinders. They reinforce the existing mindset and infuse existence with stability. They reduce ambiguity, render the unfamiliar familiar and, in this way, tame the chaos that surrounds us. It is the in-built temptation for preferring precision, clarity and orderliness that makes the vague and ‘blurry’ periphery ever so important in today’s organizational environment. This is the topic of the next section.

WHY DOES THE PERIPHERY MATTER?

The need to impose order and stability in an otherwise fluxing and disorderly world is a deeply acquired human instinct. From an early age we are socialized and educated to prefer simple, compact, and precise forms and to generally ignore vague, incoherent and inarticulate forms in our perceptual apprehension. We lack what the poet John Keats

calls a ‘negative capability’: ‘when a man is capable of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason’ (*letter*, from John Keats to G. and T. Keats, Dec. 1817). This *impatience* with disorder is a major impediment to the systematic cultivation of peripheral vision. The processes of framing discussed in the previous section suggests that individuals, teams and organizations tend to feel more comfortable with well-established frames of understanding than they are with breaking them. The key problem with this is that they may make organizational life appear more clear but, in so doing, insulate organizations from the messiness and complexities of the real world. Miller, for instance, studied how previously exceptional organizations brought about their own fall by becoming more and more focused and hence less and less in touch with the outside world [11]. Baumard and Starbuck discussed how organizations may often not learn from past mistakes because individuals slant interpretations of ambiguous sequences of events to conform to their own expectations [12]. The conclusions of these studies are noteworthy: the interaction between existing frames of reference and individual interests may recreate and reinforce a particular world-view inside the organization. The clarity and stability of the “recreated” internal world may however be at odds with the dynamics of the external ‘real’ world. One of the reasons why the periphery is important, then, has to do with the need for constant ‘reality-testing’: to constantly challenge organizational focus and the existing frames of mind to see if they match up with the real world.

Organizing, having to do with order and routine, tends to favor focal vision. The core activities of organizing are sense-making, structuring, and relating [13]. Organizational sense-making, in particular, is very much about *censoring* (i.e., creating boundaries and defining what is core and what is periphery) and *centering* (i.e., establishing an axis of

meaning and authority). Focused organizations tend to become better in doing what they do as times goes by because routines help improve efficiency. They exploit existing capabilities and act in the context of a dominant logic, i.e. the (often implicit) theory of competition and value creation embedded in an organization's thinking and practice. The dominant logic is the conceptual lens through which the organization sees the world. When the world changes and the lens remains the same, it can become a blinder that makes it difficult for the organization to understand the change processes taking place [10]. This focus on the exploitation of a dominant logic may be positive if the environment is stable. When it is not, however, exploitation needs to be complemented with a focus on exploration with a view to challenging the dominant logic. Exploration requires peripheral vision and a deliberate departure from established practices. The dialectic between exploration and exploitation hence captures the tension between peripheral and focal vision.

As noted by Day and Schoemaker, the periphery is important because it is where major risks and opportunities can be found [2]. The authors use a metaphor introduced by Andy Grove, the past CEO of Intel, to illustrate this point: when spring comes, snow starts to melt where it is most exposed, i.e., at the periphery. The periphery, then, is a zone of vulnerability and open exposure. Weak signals from such zones of exposure may inform an organization about impending changes in competitive landscapes. Domino's, Amazon and Southwest, for example, started at the periphery of established industry sectors in an undefined space of intersection between industries, mindsets and technologies. Today they have become key players and re-definers of industry sectors. This idea that significant changes often begin relatively unnoticed at the periphery is not new. In art, for instance, the Impressionist movement, which is now very much a part of

the establishment, and which began in the 1860s was avoided and shunned by the main art galleries in France. In all these cases the process of melting is so powerful that it eventually reaches the center and effects major commercial/cultural transformations. Former peripheral activities take over the center: blogging and video gaming were once peripheral but now are becoming mainstream activities in our digital societies. And what is interesting is that these activities can be understood as parts of a wider and deeper process: the process of digitalization of societies, something that may be a source of further fundamental changes in terms of education, communication, and cultural renewal [14]. What this tells us is that much of social, cultural and economic and political transformations begin at the periphery of awareness and then gradually but almost inexorably seep into the center of attention. Awareness of peripheral happenings is thus critical if organizations are to develop foresight and to anticipate the future.

The relevance of peripheral vision for organizational strategizing is a topic to be studied but some areas where it may matter most include: (a) the identification of new customers; (b) the identification of threats and opportunities in emerging technologies; (c) the problem of dealing with rivals who speak a different language; (d) the problem of intelligence failures [15]. The next section is devoted to the way teams may contribute to increase attention to the periphery.

PERIPHERAL VISION THROUGH TEAMS

As we have seen, the past experience of individuals, teams and organizations tends to leave them with a legacy of inflexibility. They learn to focus and to deal with common threats and opportunities through an evolutionary process. The result of such a process of learning and reinforcement can be quite useful if the present is not much different

from the past. But if the competition changes – and chances are that it will in our hyper-competitive global world – past learning may lead to future disaster. The very strategic capabilities that led to success in the past may become an impediment for the future. The process of change and adaptation may be made especially difficult for organizations because, contrary to individuals, they do not have general purpose sensors, comparable to the human eye, to detect transformations taking place at the periphery. Because of the way that organizations are functionally structured, there is a tendency to rely on specialized focal knowledge and this generates a type of tunnel vision that dominates over the kind of peripheral vision that is increasingly needed. One possibility for overcoming this limitation, according to Winter, is for the CEO to be the peripheral viewer *par excellence* since he/she is the only person in the organization with the authority to redeploy or redirect collective attention [15].

In this section, we extend Winter's idea to suggest that, more than making use of the peripheral vision of the individuals within the system, organizations have much to gain from using the peripheral vision of teams of people. Or more precisely, of some types of organizational teams (see Table 1). The relocation of the locus of peripheral vision from the individual to the team has several advantages. First, and as discussed before, individuals are subjected to a number of cognitive limitations. CEOs are no exception [16]. Despite their evident strategic role, they too have 'blind-spots' that they are often not aware of. Because of the inherent diversity of understanding of team members, teams are less susceptible to these 'blind-spots'. Second, well functioning teams may be more competent than the sum of their members in diagnosing relevant issues [17]. Third, peripheral issues are ambiguous and paradoxical by definition and people need to interact in order to deal with ambiguity. By encouraging exploration and alternative

interpretations and hence deferring premature definition of problem-situations teams may help to inculcate the ‘negative capability’ required for inducing peripheral awareness and vision. Reaching consensus takes longer in effective teams because doubts, concerns with reliability of facts and with perceptions of priorities are given sufficient airing and this helps to instill a resistance to premature closure. As such, the team may be a more fruitful forum to deal with ambiguity than the individual [18]. Fourth, it has been argued that teams can be more creative than large organizations, because they may be better able to perceive the potentialities of the periphery [19]. Fifth, organizations sometimes create teams with the specific purpose of exploring boundaries, which may be thought of as one of the forms of peripheral initiative [20]. The scenario-planning group in Shell, for instance, is one such example of this kind of initiative.

We are not suggesting that every team is effective in scrutinizing the periphery. As depicted in Table 1, some teams simply don’t work whereas others are competent in focusing on tasks but not in opening up their vision. As such, some individuals may be more competent than some teams. With this in mind, and in preparing the terrain for future research, we will discuss why, theoretically at least, teams may constitute a fertile soil for cultivating peripheral vision.

Table 1 about here

To explore the relationship between teamworking and vision, we consider that there can be four types of teams, depending on how lines of attention are emphasized. Some teams may combine focal and peripheral vision. We called these *minimally-structured teams*. Others display a focal vision but not a peripheral vision. These were called *execution teams*. A third type is constituted by teams with developed peripheral vision but not equivalent focal vision. These have been designated as *immersion teams*. And finally, a fourth possibility is constituted by those teams lacking both focal and peripheral vision. These are called *dysfunctional teams*. This typology should be viewed as an exercise of disciplined imagination rather than an attempt to provide a definitive structure of clear cut categories [21]. In the rest of this section we will distinguish the four types of teams according to their distinguishing visual 'eye'.

Minimally-structured teams. Minimal structures are designs based upon three elements: (1) coordination by action, made possible by (2) a minimal set of rules and on (3) a shared social objective [22]. Minimal structures can be conceived as a small set of big rules, or as a form of organizational structuring aimed at enabling individuals to create organizational value through flexible action adjusted to the requirements of the situation. These are the teams potentially most conducive to corporate rejuvenation because they stimulate individuals to initiate purposeful action on a daily basis [23]. Minimally-structured teams facilitate the development of both peripheral and focal vision. This is because they have a clear goal but not a clear path for attaining the goal. According to Hackman, the clarification of ends without the clarification of means tends to stimulate the best of teamworking [24]. The team has a clear direction combined with ample space for innovation and exploration. This is the type of structure that enables discovery without loosing focus. Members of minimally-structured teams will be

pressed to remain focused, because there is a clear goal, as well as a number of other drivers of focal vision, including milestones and responsibilities. But, at the same time, the possibilities for action are ample: behaviors are not prescribed, paths are open to exploration, and improvisation is embedded in the system. Minimal structures, in this sense, facilitate both convergence and divergence, attention to the center and openness to the periphery. The similarities between minimal structuring and jazz performance, illustrate the potentialities of this type of designs for the re-education of attention, maintaining focus but continuously *oscillating* to and from the periphery [25]. What this oscillation does is to develop a heightened sensitivity to figure and ground and this is well understood in the development of any artistic capabilities as Ehrenzweig [26] points out. ‘When the art-school student takes up drawing he is made to watch not only the outline of the object he draws (in other words the figure), but also the negative form which the figure cuts out from the background’. In other words, they are encouraged to see how the *means* (i.e., the negative strokes of the pen) affect the overall impression of the formed figure (i.e., the *ends*). This need to combine the encouragement of personal initiative with a shared vision has been described as a crucial feature of creative organizations [27].

Immersion teams. Organizational efforts to reach the periphery tend to be timid. Efforts for understanding potential customers, for example, are often based on second hand evidence collected through marketing research. Trends are explored in cold databases through ‘mining’. Immersion, on the contrary, refers to sharing the experience of the periphery.

The idea of immersion has to do with ‘diving into’ a different reality. It represents, in this sense, an effort of collective imagination, or the inter-active exploration of future possibilities from present experiences. Brown analyzed the theory and practice of immersion and suggested that organizations may gain peripheral vision through the creation of cultures in the periphery that are different from those at the core [14]. He explained how he gained a new understanding of video and computer games: ‘Understanding the periphery is often a difficult process. When I first saw the modern video and computer games, I was shocked by their gore and violence, as are many people from my generation. Because of this, I may have dismissed them too quickly. It was not until I was invited by gaming enthusiasts to spend a year immersed in this periphery that I realised the power of these games and managed to go beneath my superficial reaction to recognise that the real focus of players was not on content but on context’ (p.144).

Immersion can be both an individual and a group process. Immersed individuals are those that become members of some peripheral entity. Immersed teams are those that are created and maintained with the purpose of staying at the periphery – at least for some time. The notion of ambidexterity captures the necessity of organizations to probe the periphery without deviating from the business at hand [28]. That is why while the rest of the organization is clearly focussed the immersed teams may remain unfocussed by design. They are set up to enrich the organization with peripheral vision, not to see reality through the focal lenses of the organization. Immersed teams, however, are sometimes difficult to maintain due to centripetal forces from the ‘normal’ organization [20]. Conflict of priorities may occur and this may lead to compromising the peripheral capacity of the team.

Execution teams. Many organizational teams, perhaps the majority, are execution teams. They are clearly-focused entities designed to execute well-defined functions. They are expected to exploit established knowledge and to execute with competence, not to bring about new ideas or new angles of vision. They are expected to be focussed; peripheral vision is not to be cultivated by them. The virtues of competent execution have been extolled in the recent past. Brilliantly formulated strategies are irrelevant unless they are implemented with an equivalent competence [29]. Execution teams are, hence, teams of focussed implementers.

Dysfunctional teams. Finally, some teams lack focus and are neither able to achieve competent execution nor to effectively explore the periphery. If some groups work, there are others than don't [30]. The latter have been unable to become well-functioning teams, and created a dynamic that transformed the whole into less than the sum of its elements. We call these teams 'dysfunctional' but they correspond to both the dysfunctional and the conflictual types in Jarzabkowski and Searle's typology [31]. These are, in short, teams with low capacity for collective action. By collective action we mean, following Jarzabkowski and Searle, the ability to work together while maintaining the capacity for questioning and debating. The experience of teamworking in these collectivities tends to be a source of dissatisfaction. There are many possible reasons for the formation of dysfunctional teams, including unclear rules and incompetent leaders, power and politics or low capacity to engage in action. Conflicting teams do not contribute to enhance the organizational eye. They are engaged in internal political tensions that prevent focus on external objects, be they at the center or at the periphery .

The above typology suggests that two types of teams may be competent in the exploration of the periphery: minimally-structured teams and immersion teams. In the next section, we discuss how these teams may contribute to 'sharpen' peripheral vision.

'SHARPENING' PERIPHERAL VISION THROUGH TEAMWORKING

Day and Schoemaker proposed several possible approaches for improving the peripheral vision. These included the expansion of focus, asking the right questions, experimenting and immersing in the periphery, and using technology to be more agile. In this section, we discuss the different means that minimally-structured and immersed teams may employ for developing peripheral vision. To understand the difference between these groups, we will juxtapose Table 1 with two additional dimensions: collective action and collective imagination (see Table 2). Collective action was defined in the previous section as the ability to work together while maintaining the capacity for questioning and debating. By collective imagination we refer to the team's capacity to build on the creative skills of their individual members to stretch the number of possibilities envisioned by the group.

Table 2 about here

Table 2 suggests four possibilities: practical imagination, corresponding to minimally-structured teams; fundamental imagination, corresponding to immersed teams; practical action, corresponding to execution teams; and inaction corresponding to dysfunctional

teams. The two latter types will not be discussed in detail, because they are not interesting from the perspective of the periphery. This does not mean that they are not interesting from the perspective of theory or practice. On the contrary, practical intelligence plays a fundamental role in real-world pursuits [32]. In the rest of this section, we consider the cases of minimally-structured and immersed groups. The possibilities discussed below regarding each group are not meant to be complete, but representative. It should also be considered that, because knowledge is both leaky and sticky [33], these ideas may help to improve peripheral vision or they may not. In other words their knowledge may be diffused or retained in the teams that produced it. As indicated in Table 3, there are as many good reasons to expect these suggestions to facilitate peripheral vision, as to avoid excessive optimism regarding their effects.

Table 3 about here

The case of minimally-structured teams

Minimally-structured teams help to re-educate attention to the periphery by combining collective action and collective imagination. Action, and experimental action in particular, triggers imagination. Three strategies for developing peripheral vision in minimally-structured teams can be identified: zooming, improvisation and bricolage.

Zooming. Large collectivities (such as firms and nations) sometimes suddenly collapse for systemic reasons. Hurst and Zimmerman discussed the cases of GM, IBM and the Soviet Union as illustrations of processes of change that they compared with the

ecocycle [34]. The ecocycle of such a complex system as a forest, for example, is composed of myriad interactions between subsystems. The overall ecocycle is an emergent quality of the system, produced by interactions at the lower levels. Many of the subsystems have fractal qualities, meaning that they resemble the system as a whole. Existing research suggests that something which is not perceived by the system, may be perceived at the level of some subsystem. For example, people at lower levels in an organization may have, because they are nearer to the 'coal-face', a clearer grasp of an impending disaster than the top management team. Engineers at NASA, for instance, were better positioned to perceive the corrosive effects of the change from an engineering culture to a managerial one [35]. In their work on surprises, Cunha, Clegg and Kamoche made the same point: what comes as a surprise at one level of the organization could be well known at other levels [36]. Learning from ecocycles and organizational surprises leads to a couple of possibilities: organizations may gain better peripheral vision by creating teams that zoom in and out, from top to bottom. These teams may circulate ideas that already exist in some parts of the organization or at its borders, and let the periphery become more apparent. By gaining different perspectives of the organization, people in a diverse team may better understand and appreciate what, in other circumstances, may be perceived and dismissed as irrelevant or local. The process of zooming, or of collective travelling across the upper and lower, internal and external boundaries, between action and reflection, may help participants gain a systemic perspective and bring to the center important insights from the periphery. Zooming teams, composed of people from different parts of the organization and outsiders (clients, suppliers), combine the internal and external forms of sensing and operationalizes several of the possibilities presented by Winter (2004) for improving the

peripheral vision (e.g., consider new sensing areas, improve the organization's general purpose sensors).

Improvisation. Improvisation occurs when spontaneous action takes place in the absence of prior planning. Improvisation can contribute to the development of peripheral vision because it explores and thrives in the cracks of planning. When plans (based on established assumptions) are not adequate to action, people decide on the spur of the moment to respond in any way they can to a pressing demand. Improvisation in the context of minimal structures represents a pendulum movement between the center and the periphery, the plan and the circumstance, structure and imagination. Improvising people are not executing an exercise of fundamental imagination but, rather, exploring the potentialities of structure as a source of change.

Improvisers use the structure to coordinate collective action, which propels collective imagination. Imagination is the output of inter-action and it flourishes at the intersection between structure and the lack of it [37]. The association between improvisation and peripheral vision suggests that 'sense-and-respond' organizations require more freedom of action and attention to movements at the periphery than the traditional 'make-and-sell' organizations [38]. As noted by Clegg, "improvisations pose unique opportunities for insight and innovation among routines as they break through to the other side of structure." [39]. Breaking through to the other side, as the song goes, may open new doors of perception.

Bricolage. Bricolage refers to the invention of means from a limited set of available resources to solve unanticipated problems. It is a form of practical imagination, in the

sense that it manifests itself in how people organize their everyday activities to accomplish their goals and how they reorganize to adapt when something deviates from normality. This form of practical imagination may therefore refer to how people reorganize their resources in face of, among distinct possibilities, opportunities detected at the periphery. Bricoleurs are agents of peripherality when they deviate from the normal use of resources to different, often unconventional uses. Bricolage experiences at the periphery may renew the organization's understanding not only of its resource base but also of its strategies of action [40]. It therefore contains an interesting potential of collective imaginative action.

The case of immersed teams

Immersed teams help to re-educate attention to the periphery by stimulating collective imagination. Three strategies for developing peripheral vision in immersed teams can be devised: scenarios, wild cards and weak signals.

Scenarios. Scenarios may be viewed as processes of thinking through alternative stories about how an organization's environment may evolve into the future. In its essence scenario thinking is a social learning process, established around strategic conversations, reflexivity and adaptive learning. With scenarios, a team is not trying to predict the future but rather looking for a deeper understanding of the forces operating in the organization's environment, namely those incubating at the periphery and journeying to the center. Scenarios may be valuable to the extent that they stimulate a deep appreciation of the social forces operating outside the focus of the organization. Scenarios can be cognitive exercises of imagination but, in line with the notion of

immersion discussed in the previous section, they can also combine cognition with actual experience. Immersed people may produce more informed extrapolations of how the present periphery may become tomorrow's centrality.

Wild cards. A radical form of scenario thinking consists in pushing imagination to its limits. This can be attained through the process of building wild cards. Wild cards refer to low-probability, high-impact events that might be introduced into standard strategizing reflection in order to increase the ability of organizations to anticipate and adapt to surprises arising in turbulent business environments [41]. They voluntarily bring the periphery to the center. The fact that sudden and unique incidents may constitute turning points in the evolution of a certain trend makes them critical challenges for management. As intellectual objects, these dramatic discontinuities are notoriously difficult to predict; and because they are new to the world, are very hard to translate into concrete (re)action guidelines. They arise persistently but never in the same way. In a post-9/11 world understanding, anticipating and preparing for wild cards constitutes a possibility for stretching the imagination to the farthest reaches of the periphery.

Weak signals. As is often observed, most disruptive threats come from the periphery. Established competitors build a sort a collective rationality based upon the current drivers of the market. They are not typically interested in eroding these drivers because they are sustained by them. On the contrary, competitors from the periphery have nothing to lose from the erosion of the established structure of competition. Hence the need for incumbents to listen to what Menon and Tomkins gracefully designated as the sounds of 'little cat feet' of new competitors and new trends of competition [42].

Changes on the far side of the periphery may silently approach the center. The lack of audible signals may, however, distract the competition. Then, when the movement is noticed, it may be too late to develop an effective counter-movement. The journeys from the periphery of such companies as Dell or Domino's illustrate this point. To facilitate the process of listening to the little cat feet, some companies developed a number of ideas. IBM, for example, created a group called Crow's Nest to develop market intelligence at the periphery. Its goal: like a 'crow's nest' in a ship, detect new land and dangerous reefs ahead. This group, supported by a technology launched in 2001, called the WebFountain, was able to devise a number of weak signals from the periphery and to work on them. For example, whereas national press was spreading positive reports about the company, local press was producing more negative reports. The discovery of this discrepancy suggested the need to communicate better with the local press in order to prevent damage in the firm's reputation in local communities.

The assumptions developed by an organization over time, may constitute a source of inertia and of difficulty in seeing the periphery. It is interesting to note that these six practices have the potential to challenge and unearth assumptions, and therefore to unfreeze the dominant logic. McGrath and MacMillan showed how companies may confound assumptions with facts and how these "facts" can be dangerous for decision makers [43]. Disney's assumptions that Europeans would behave as Americans or Japanese, namely in terms of their eating habits, proved to be wrong, and were a source of dissatisfaction to Euro Disney customers. Unearthing assumptions can be facilitated through the constitution of diverse and well-functioning teams. As observed by Hamel, inviting new voices – and giving them expression and appreciation – may help organizations think peripherally [44].

CONCLUSION

The strategy and organization literatures have repeatedly voiced the need for organizations to have dual strategies, in order to compete in the present while preparing for the future [45]. The advice regarding dual strategizing confronted managers with such needs as redefining and reshaping the business, making bold moves, reorganizing, provoking change, and so forth. These are uncontested suggestions in rapidly changing markets. The question, however, is not a ‘what’ but a ‘how’ question. For example: how can organizations make successful bold moves? The notion of peripheral vision helps to understand the type of action organizations may take in order to reshape themselves and their markets. The use of teams in exploring the ‘vast oceans of data’ at the periphery [42] may clarify the dynamics of change and facilitate both awareness and deep understanding of the winds of change.

We tried to contribute to the literature in a few ways. First, we discussed the under-explored notion of organizational periphery, adding to the relatively scarce literature on the topic. Second, we related teamworking and the notion of peripheral vision. Several types of teams were distinguished and their potential for re-educating attention was discussed. Third, we advanced half a dozen practical possibilities for stimulating peripheral vision. Fourth, we contributed to the cognitive repairs literature. Heath, Larrick and Klayman defined cognitive repairs as organizational practices that help to correct the cognitive shortcomings of individuals [46]. In this paper we focussed on group-based cognitive repairs. These group level repairs may complement organizational ones, and thus contribute to the literature that is investigating the way

cognitive shortcomings prevent effective management learning. We advanced a number of group possibilities for dealing with individual and organizational shortcomings through stretching the imagination in the direction of the periphery.

The arguments of this paper should be read with caution. We are contributing to the peripheral vision literature with a number of questions rather than with well rounded answers. A major question should be considered with special attention: can peripheral vision be improved? With this paper, we advanced a number of possibilities of how teams may contribute for improving this capability. But we also noted that, because knowledge is both sticky and leaky, they should be considered as mere possibilities. They therefore need to be tested empirically. It should also be considered that teams are often constituted by similar people with similar beliefs [47]. When that is the case, teams will not facilitate the improvement of peripheral vision. A final self-criticism refers to the fact that these suggestions may be not creative enough to deal with the paradoxical nature of peripheral vision. Several possibilities may be explored in future research. These include the use of humor as a code-breaking practice, the introduction of voluntary disorder and interruption, and the institution of a system of Socratic wisdom, i.e. the recognition that we all need to know more than we do, the cultivation of multifocal attention and the increase of polyphonic expressiveness, i.e., allowing the usually silent voices to speak up [48]. In this sense, periphery is silence, another possibility to be explored by future research.

The contribution of teams and teamworking for the re-education of attention was discussed as relevant from a theoretical as well as from an applied perspective. Theoretically, the exploration of the periphery may help to understand processes such as

organizational change, the creation of dominant mindsets, foresight, surprises, organizational cognition, and so on. In terms of application, the study of the periphery may suggest a number of ways of dealing with the unexpected and the ‘invisible’. Considering that threats and opportunities are not the focus of everyday attention, bringing peripheral vision to the fore may constitute a pertinent research endeavor.

REFERENCES

[1] Day, G.S. & Schoemaker, P. (2004a). Peripheral vision: Sensing and acting on weak signals. *Long Range Planning, 37,* 117-121.

[2] Day, G.S. & Schoemaker, P. (2004b). Driving through the fog: Managing at the edge. *Long Range Planning, 37,* 127-142. Quote from p.131

[3] Porter, M.E. (1996). What is strategy? *Harvard Business Review*, November-December, 61-78.

[4] Hoffman, D.D. (1998). *Visual intelligence: how we create what we see*. New York: W.W. Norton.

[5] Capra. F. (1975). *The tao of physics*. New York: Wildwood Press.

[6] Clegg, S.R. (2005). Why is organization theory so ignorant? *Journal of Management Inquiry*, forthcoming.

[7] March, J.G. (1991). Exploration and exploitation in organizational life. *Organization Science, 2*, 71-87.

[8] Krueger, J. & Clement, R. (1994). A truly false consensus effect: An ineradicable and egocentric bias in social perception. *Journal of Personality and Social Psychology, 67,* 596-610.

[9] Janis, I.L. (1982). *Groupthink*. Boston: Houghton Mifflin.

[10] Prahalad, C.K. (2004). The blinders of dominant logic. *Long Range Planning, 37,* 171-179.

[11] Miller, D. (1990). *The Icarus paradox: How exceptional companies bring about their own fall*. New York: Harper Collins.

[12] Baumard, P. & Starbuck, W.H. (2005). Learning from failures: Why it may not happen. *Long Range Planning, 38*, 281-298.

[13] Weick, K.E. & Westley, F. (1996). Organizational learning: Affirming an oxymoron. In S.R. Clegg, C. Hardy & W.R. Nord (Eds.), *Handbook of organization studies* (pp.440-458). Thousand Oaks, CA: Sage.

[14] Brown, J.S. (2004). Minding and mining the periphery. *Long Range Planning, 37*, 143-151.

[15] Winter, S.G. (2004). Specialized perception, selection, and strategic surprise: Learning from the moths and bees. *Long Range Planning, 37*, 163-169.

[17] Katzenbach, J. & Smith, D. (1993). *The wisdom of teams: Creating the high performance organization*. Boston, MA: Harvard Business School Press.

[18] Daft, R.L. & Lengel, R.H. (1984). Information richness: A new approach to managerial behavior and organization design. In B.M. Staw & L.L. Cummings (Eds.), *Research in Organizational Behavior* (vol.6; pp.191-233). Greenwich, CT: JAI Press.

[19] Lipman-Blumen, J. & Leavitt, J. (1999). *Hot groups*. New York: Oxford University Press.

[20] Oliver, D. & Roos, J. (2003). Dealing with the unexpected: Critical incidents in the LEGO Mindstorms team. *Human Relations, 56*, 1057-1082.

[21] Weick, K.E. (1989). Theory construction as disciplined imagination. *Academy of Management Review, 14*, 516-531.

[22] Cunha, M.P. (2006). Minimal structure. In S.R. Clegg & J. Bailey (Eds.), *International encyclopedia of organization studies*. Thousand Oaks, CA: Sage.

[23] Ghoshal, S. & Bruch, H. (2003). The invisible underpinnings of corporate rejuvenation: Purposeful action taken by individuals. In J. Birkinshaw, S.

Ghoshal, C. Markides, J. Stopford & G. Yip (Eds.), *The future of the multinational company* (pp.179-193). Chichester: Wiley.

[24] Hackman, J.R. (2002). *Leading teams: Setting the stage for great performances*. Boston; MA: Harvard Business School Press.

[25] Kamoche, K. & Cunha, M.P. (2001). Minimal structures: From jazz improvisation to product innovation. *Organization Studies*, *22*, 733-764.

[26] Ehrenzweig, A. (1965). *The psychoanalysis of artistic vision and hearing*. New York: George Braziller.

[27] Andriopoulos, C. (2003). Six paradoxes in managing creativity: An embracing act. *Long Range Planning*, *36*, 375-388.

[28] O'Reilly C.A. & Tushman, M.L. (2004). The ambidextrous organization. *Harvard Business School*, April, 74-81.

[29] Hrebiniak, L.G. (2005). *Making strategy work: A guide to effective execution and change*. Upper Saddle River: Wharton School Publishing.

[30] Hackman, J.R. (Ed.)(1990). *Groups that work (and those that don't)*. San Francisco: Jossey Bass.

[31] Jarzabkowski, P. & Searle, R.H. (2004). Harnessing diversity and collective action in the top management team. *Long Range Planning*, *37*, 399-419.

[32] Wagner, R.K. & Sternberg, R.J. (1985). Practical intelligence in real-world pursuits. *Journal of Personality and Social Psychology*, *48*, 436-458.

[33] Tsoukas, H. (2002). Knowledge-based perspectives on organizations: Situated knowledge, novelty, and communities of practice. *Management Learning*, *33*, 419-426.

[34] Hurst, D.K. & Zimmerman, B.J. (1994). From life cycle to ecocycle: A new perspective on the growth, maturity, destruction, and renewal of complex systems. *Journal of Management Inquiry, 3*, 339-354.

[35] Mason, R.O. (2004). Lessons in organizational ethics from the Columbia disaster: Can a culture be lethal? *Organizational Dynamics, 33*(2), 128-142.

[36] Cunha, M.P., Clegg, S.R. & Kamoche, K. (2005). Surprises in management and organization: Concept, sources and a typology. *British Journal of Management*, forthcoming.

[37] Hatch, M.J. (1999). Exploring the empty spaces of organizing: How improvisational jazz helps redescribe organizational structure. *Organization Studies, 20*, 75-100.

[38] Haeckel, S.H. (2004). Peripheral vision: Sensing and acting on weak signals, making meaning out of apparent noise: The need for a new managerial framework. *Long Range Planning, 37*, 181-189.

[39] Clegg, S.R. (1999). Globalizing the intelligent organization. *Management Learning, 30*, 259-280.

[40] Garud, R. & Karnoe, P. (2003). Bricolage versus breakthrough: Distributed and embedded agency in technology entrepreneurship. *Research Policy, 32*, 277-300.

[41] Mendonça, S., Cunha, M.P., Ruff, F. & Kaivo-Oja, J (2005). Wild cards in the civil aircraft and asset-management industries. Unpublished manuscript.

[42] Finkelstein, S. (2003). *Why smart executives fail*. New York: Portfolio.

[42] Menon, A. & Tomkins, A. (2004). Learning about the market's periphery: IBM's WebFountain. *Long Range Planning, 37*, 153-162.

[43] McGrath, R.G. & MacMillan, I.C. (1995). Discovery-driven planning. *Harvard Business Review*, July-August, 44-54.

[44] Hamel, G. (1996). Strategy as revolution. *Harvard Business Review*, July-August, 69-82.

[45] Abell, D. (1999). Competing today while preparing for tomorrow. *Sloan Management Review*, Spring, 73-81.

[46] Heath, C., Larrick, R.P. & Klayman, J. (1998). Cognitive repairs: How organizational practices can compensate for individual shortcomings. *Research in Organizational Behavior, 20*, 1-37.

[47] Cross, R.L. & Brodt, S.E. (2001). How assumptions of consensus undermine decision making. *MIT Sloan Management Review*, Winter, 86-94.

[48] Kornberger, M., Clegg, S.R. & Carter, C. (2005). Rethinking the polyphonic organization: Managing as discursive practice. *Scandinavian Journal of Management*, in press.

Figure 1.
Team, focus and the periphery

Minimally structured teams Periphery: Yes Focus: Yes	**Immersion teams** Periphery: Yes Focus: No
Execution teams Periphery: No Focus: Yes	**Dysfunctional teams** Periphery: No Focus: No

Figure 2.
Teams, action and imagination

Minimally-structured teams **Practical imagination** Collective action: Yes Collective imagination: Yes	**Immersion teams** **Pure imagination** Collective action: No Collective imagination: Yes
Execution teams **Practical action** Collective action: Yes Collective imagination: Yes	**Dysfunctional teams** **Inaction** Collective action: Yes Collective imagination: Yes

Table 3
Sticky/leaky knowledge, teamwork and peripheral vision

	Sticky	Leaky
Zooming	▪ Diverse well-functioning teams are difficult to create – they may spend more time exploring their inner side rather than the periphery ▪ 'Thought worlds' are difficult to reconcile ▪ Boundaries (physical, psychological) may be difficult to cross	▪ Cross-functional teams operate at the boundary, which is one form of periphery ▪ Moving across levels facilitates open mindedness ▪ Diverse teams help to feel the artificiality of boundaries – and to overcome them.
Improvisation	▪ Improvisation is a response to the local; it may not travel. ▪ Improvisation is ephemeral and dissipates	▪ Improvisations at the periphery can be routinized ▪ Improvisation stretches the organizational repertoire of action, therefore inviting experimenting with novelty
Bricolage	▪ Bricolage depends on personal intimacy with resources ▪ It relies on tacit knowledge ▪ It is difficult to appropriate	▪ Communities of practice may facilitate the diffusion of successful bricolage experiments ▪ The accumulation of these experiments may present the organization with unexplored opportunities
Scenarios	▪ People think about 'thinkable' scenarios ▪ Scenarios may produce 'lock in' interpretations, therefore inhibiting peripheral vision	▪ Scenarios break routine and mindlessness ▪ They facilitate the exploration of distant social forces, operating at the periphery
Wild cards	▪ Wild card producers may be viewed as 'extremists' ▪ Wild cards can be viewed as too radical to be taken seriously	▪ Wild cards help the organization to think 'out of the box' ▪ They can constitute powerful challenges and therefore stimulate distant search
Weak signals	▪ Weak signals have difficulty in traveling across intra-organizational boundaries ▪ Signal and noise can be easily mistaken	▪ Weak signals may be interesting ▪ Weak signals may represent a deviation to mindless routines